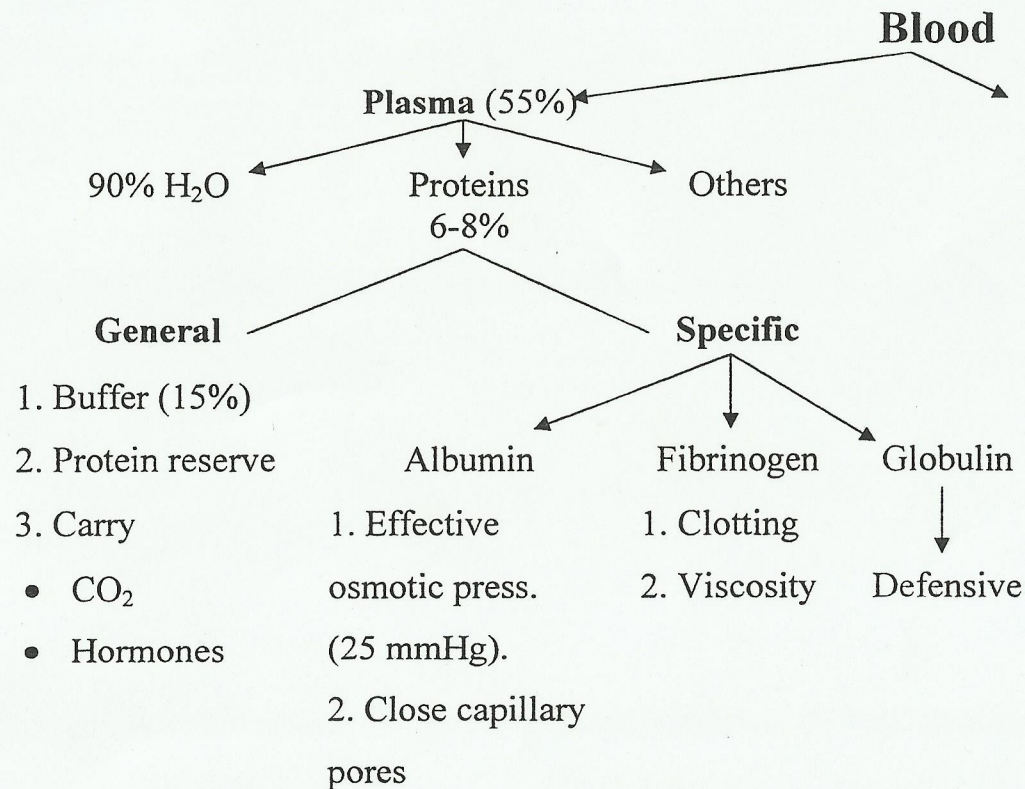
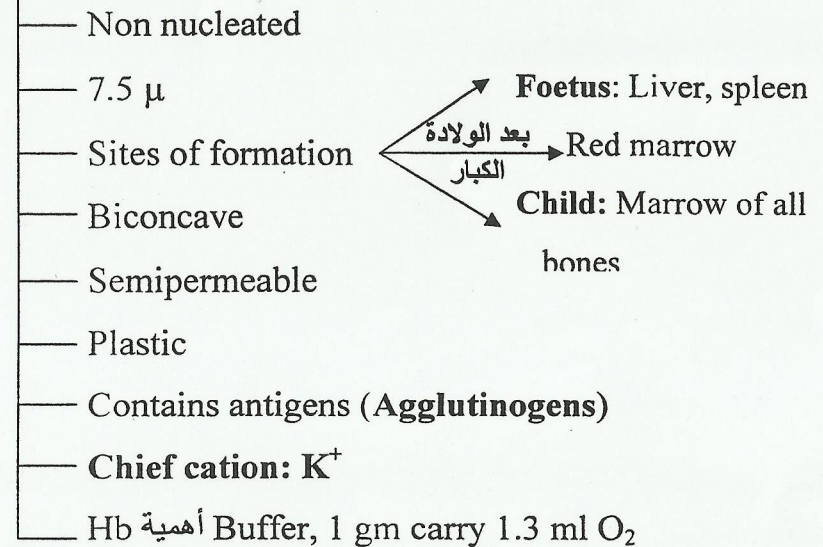


Cells (45%) – WBCs, platelets

RBCs



If free ↑ viscosity, ↑ OP

Types A (2α, 2β), A₂, F → (2α, 2γ)

Abnormal Hb S (sickle cell anemia)

Thalassemia → (α, β).

VISIT...

LANZAROTE
Caliente.COM

Blood

Hematocrite Value (HV)

% RBCs volume

Whole blood volume

Normal: 46% male
42% female
62% NB

Increases → Polycythemia
→ Dehydration

Decreases → Anemia
→ Over hydration

N.B.: ↑ HV in venous > Arterial blood

Osmotic fragility

If RBCs placed in hypotonic solution

Hemolysis

Normal

بداية
0.5%

نهاية
0.3%

Spherocytes

بداية
0.7%

نهاية
0.5%

Significance of ESR:

Not diagnostic
but
Prognostic

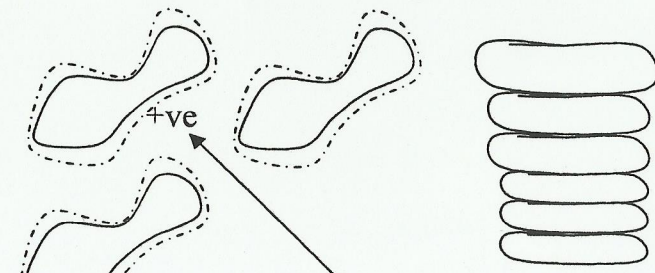
ESR

Male: 4-6 mm/h.

Female: 6-10 mm/h.

تترسب RB Cs لو تركت (blood + anticoagulant)

في Test Tube لمدة ساعة



Plasma proteins

Fibrinogen globulins

↑ ESR

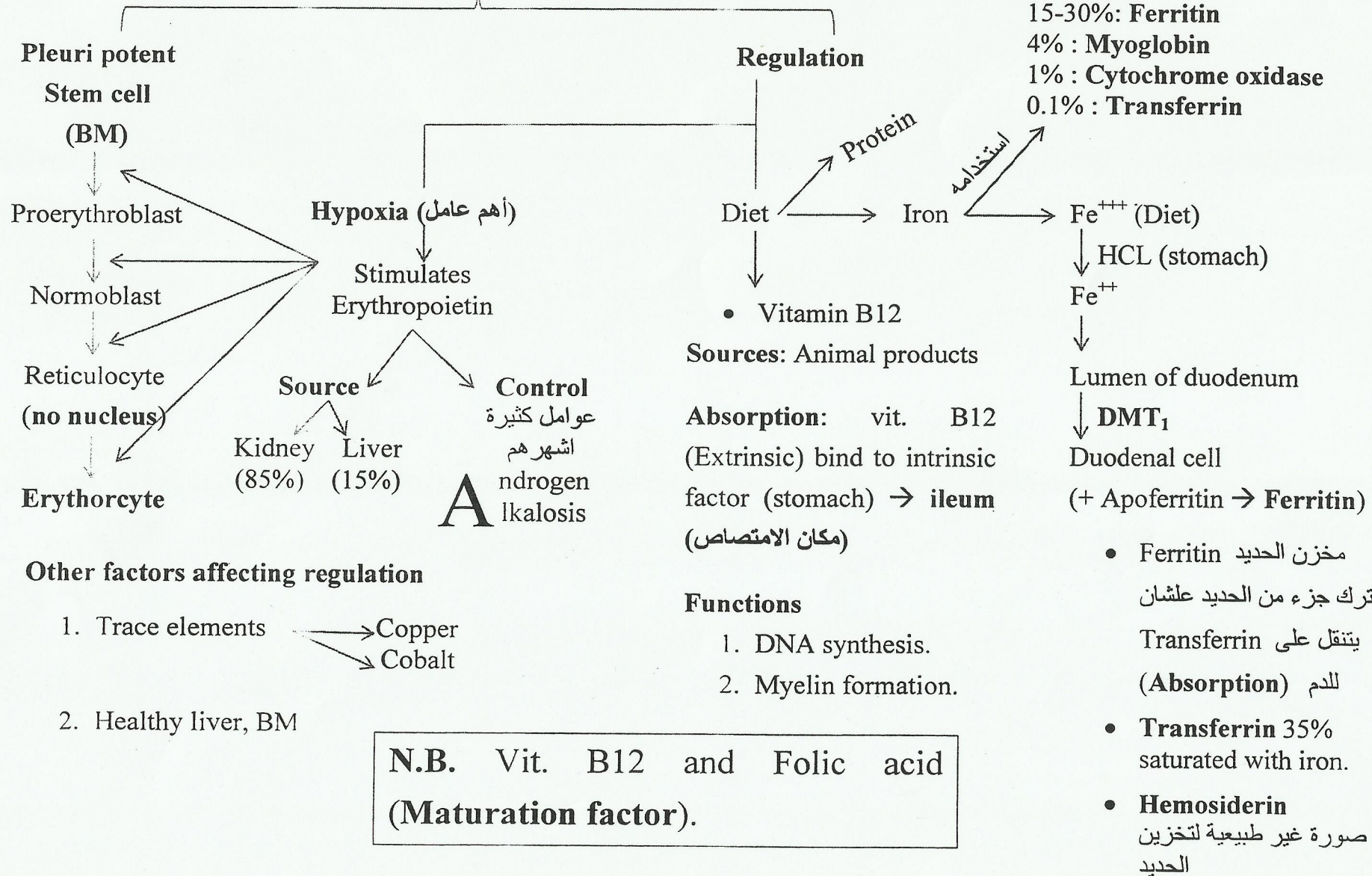
Physiological

1. Menstruation
2. Pregnancy
3. After meals
4. Exercise

Pathological

- أى
Infection
أى
Inflammation

Erythropoiesis د. محمد فايز



د. محمد فايز Anemia

Detected by

(MCQ blood indices هام جدا مسائل)

(مجموعة معادلات تحدد أي نوع anemia)

$$1. \text{MCV} = \frac{\text{HV}}{\text{RBC count}} \times 10$$

Normal: 80-95 μ^3

<80 → Microcytic

> 95 → Macrocytic

$$2. \text{MCH} = \frac{\text{Hb amount}}{\text{RBC count}} \times 10$$

Normal: 27-31 pg.

<27 → Hypochromic

>31 → Hyperchromic

$$3. \text{MCHC} = \frac{\text{Hb amount}}{\text{HV}} \times 100$$

Classification

Cell size

1. Normocytic.
2. Microcytic.
3. Macrocytic.

Hemorrhagic

Acute → Chronic

العييب فى المصنع
(BM)

Aplastic
Anemia

Normocytic
Normochromic

Cause

↓ Iron

Microcytic
Hypochromic

↓ Vit. B12

Macrocytic
Hyperchromic
= Megaloblastic

Pernicious
anemia

Others

Hemolytic

Corpusc.
Hb defect e.g.

- Hb S.
- Thalassemia.

Extra Corpusc.

Antibodies Vs RBCs

Bacterial toxins

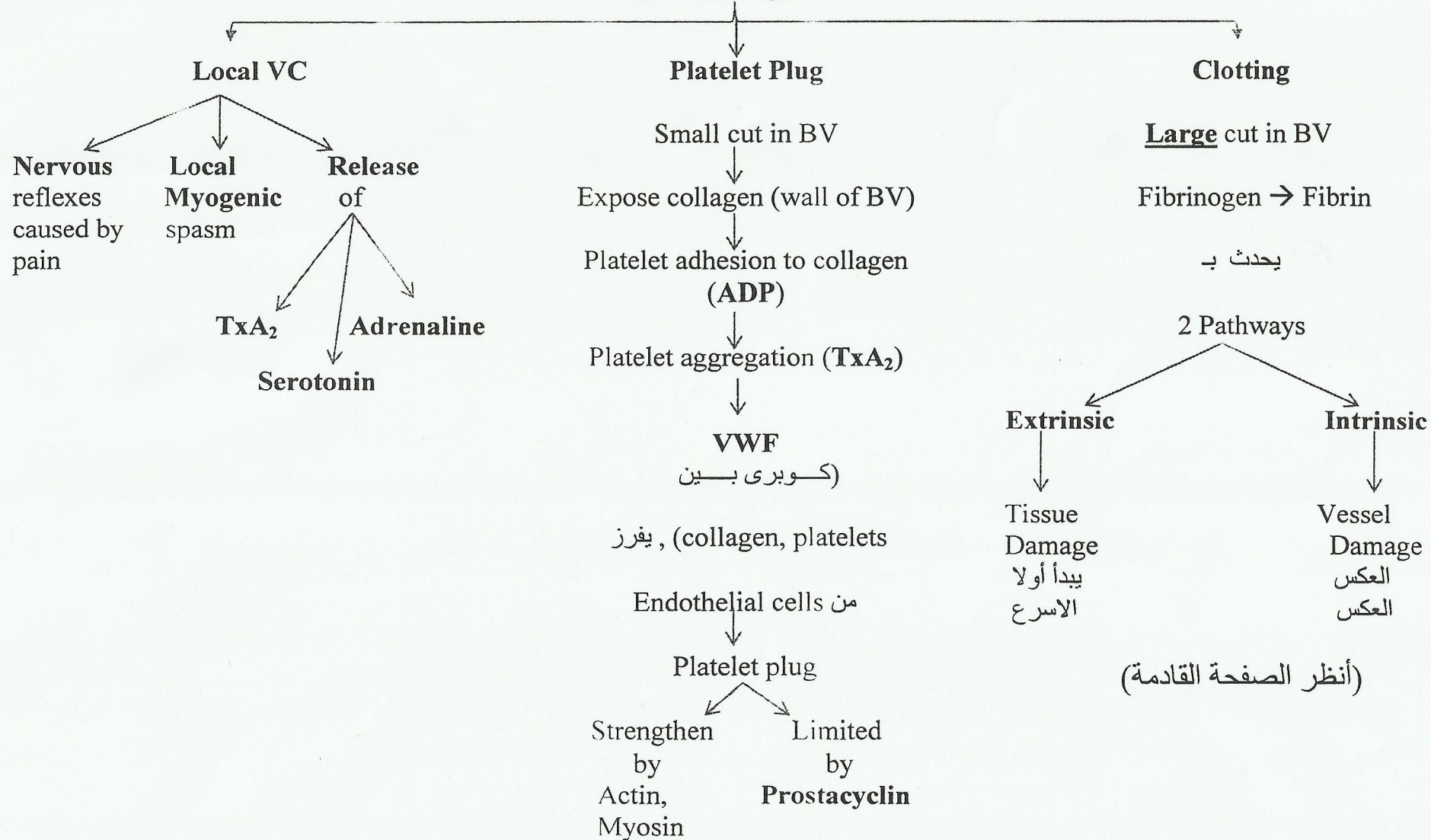
Chemicals e.g. lead

Drugs e.g. sulpha.

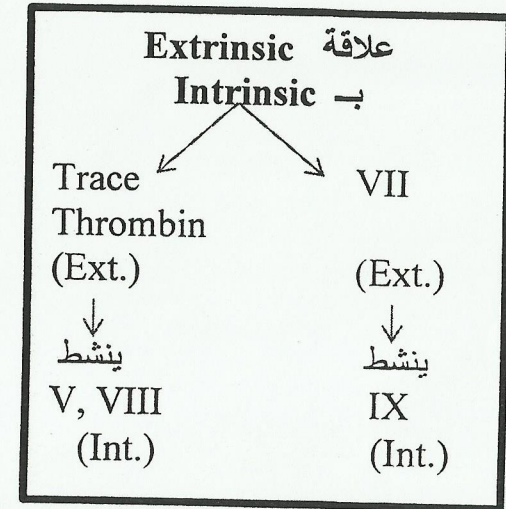
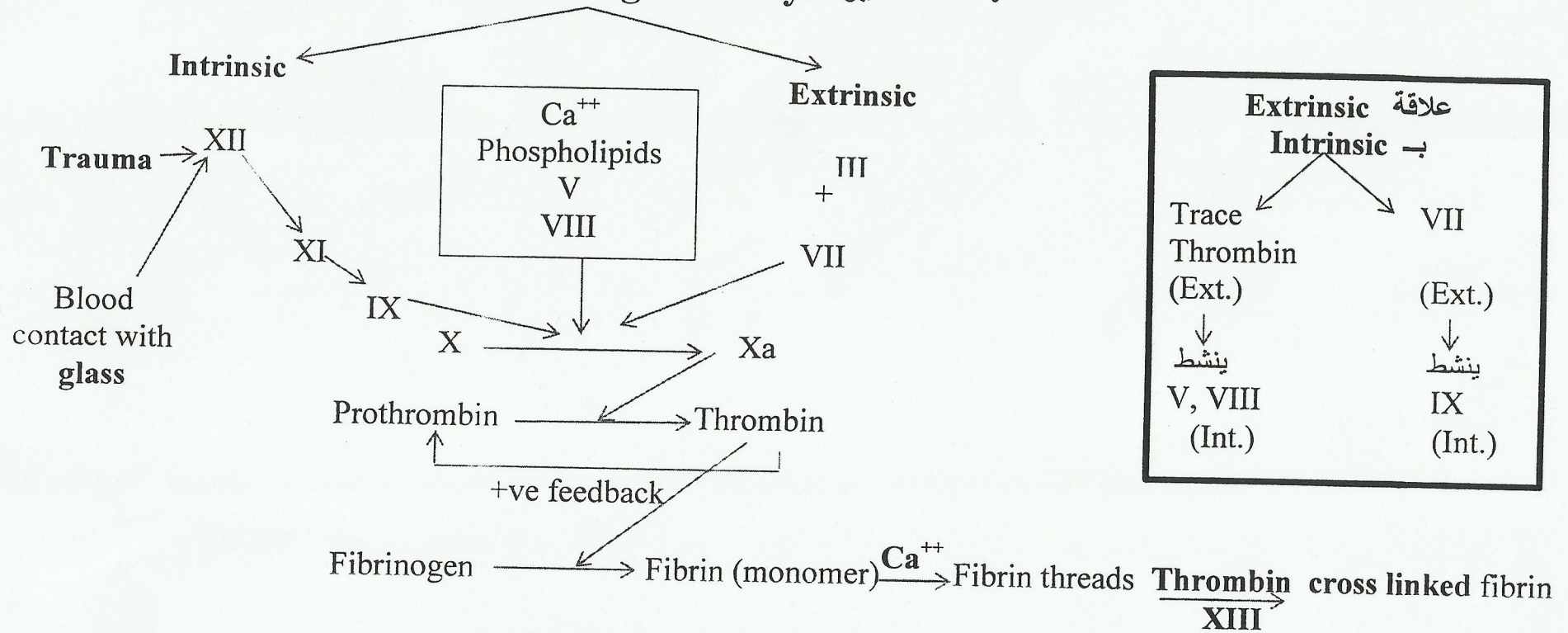
Anemia of
Renal failure

↓
Normocytic
normochromic

د. محمد فايز Hemostasis



Clotting Pathways د. محمد فايز



ملحوظات هامة

Platelets دور

1. Bond fibrin threads
2. Release XIII
3. Activate contractile proteins

Clot retraction

Clot contracts
↓
Pull edges of Broken vessels

Intestinal flora Source

Source Absorption Bile

Source

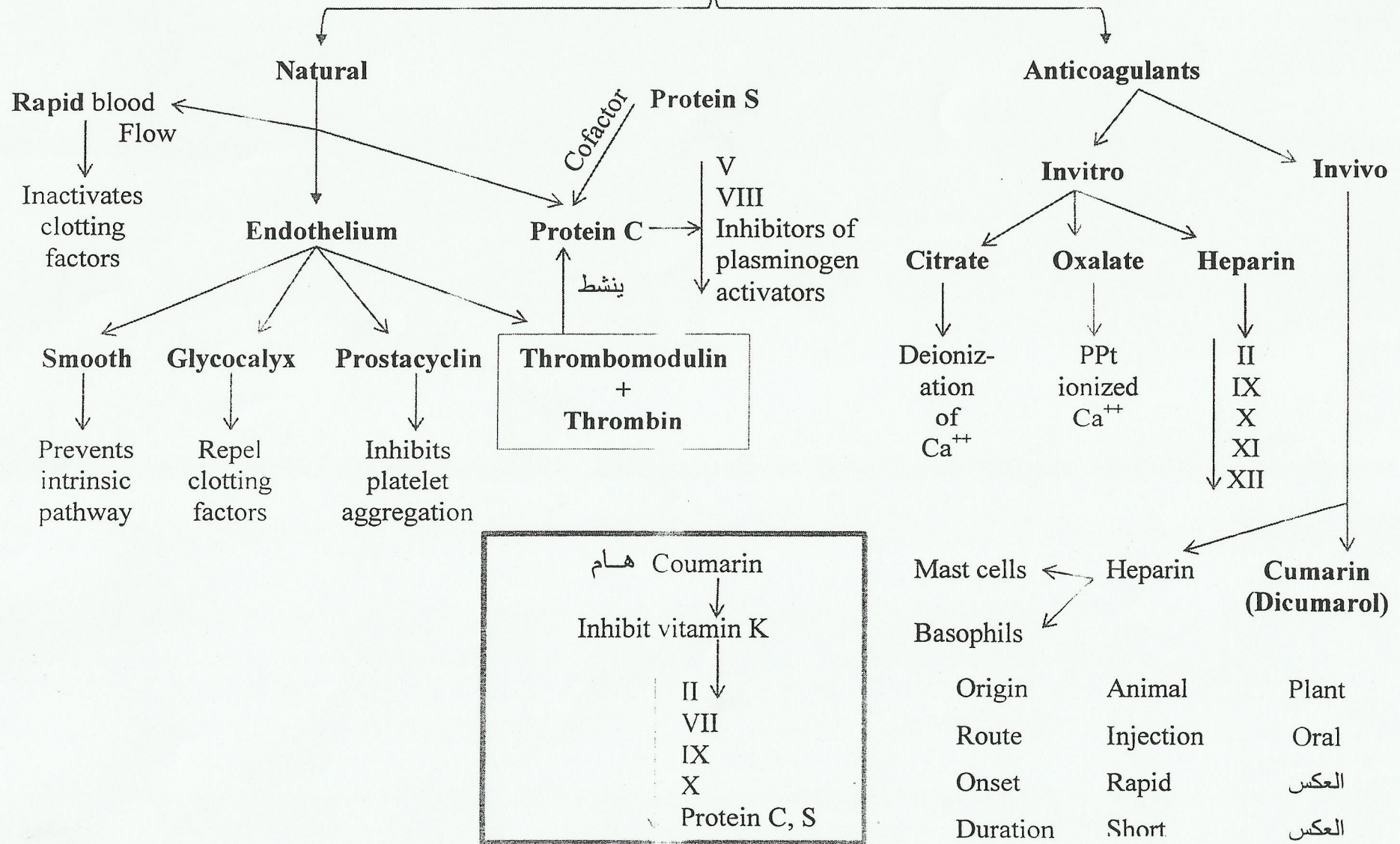
يقبل عندما

Vitamin K

-Fat soluble needs Bile for absorption
-Synthesize II, VII, IX, X

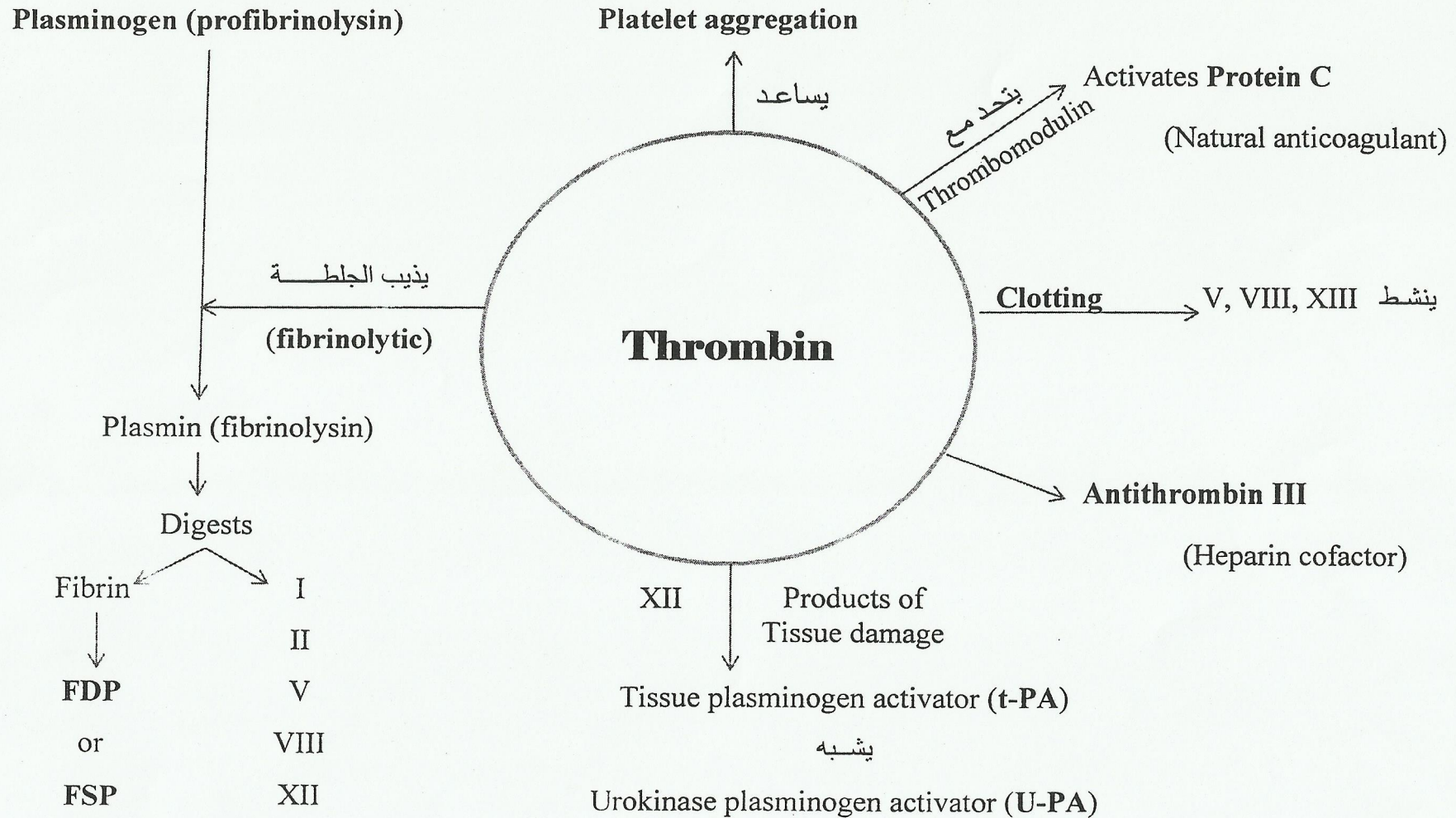
Ca⁺⁺ هام
لكل الخطوات
ماعدا اول اثنين
Intrinsic

د. محمد فايز Anticlotting

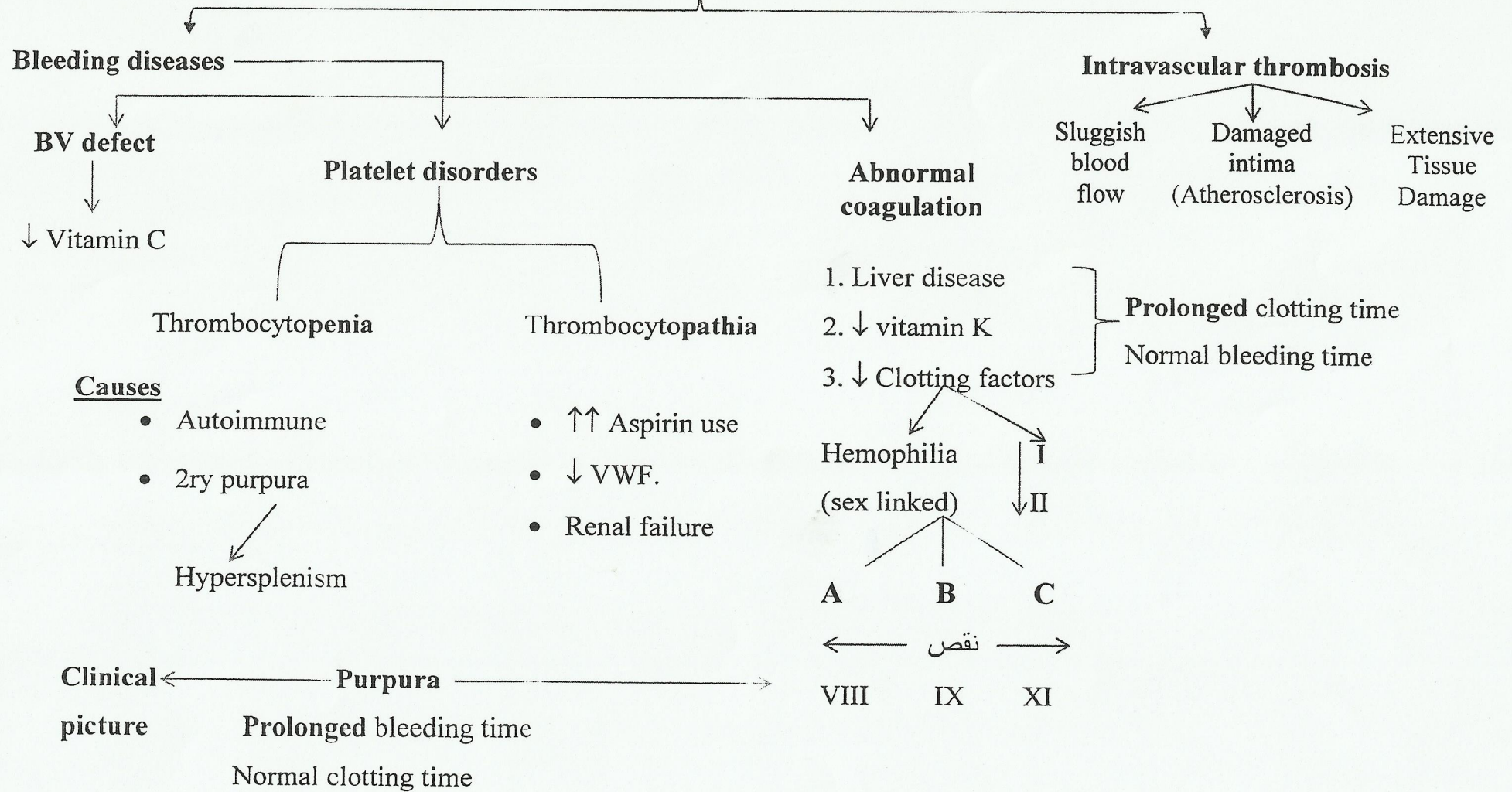


Origin	Animal	Plant
Route	Injection	Oral
Onset	Rapid	العكس
Duration	Short	العكس

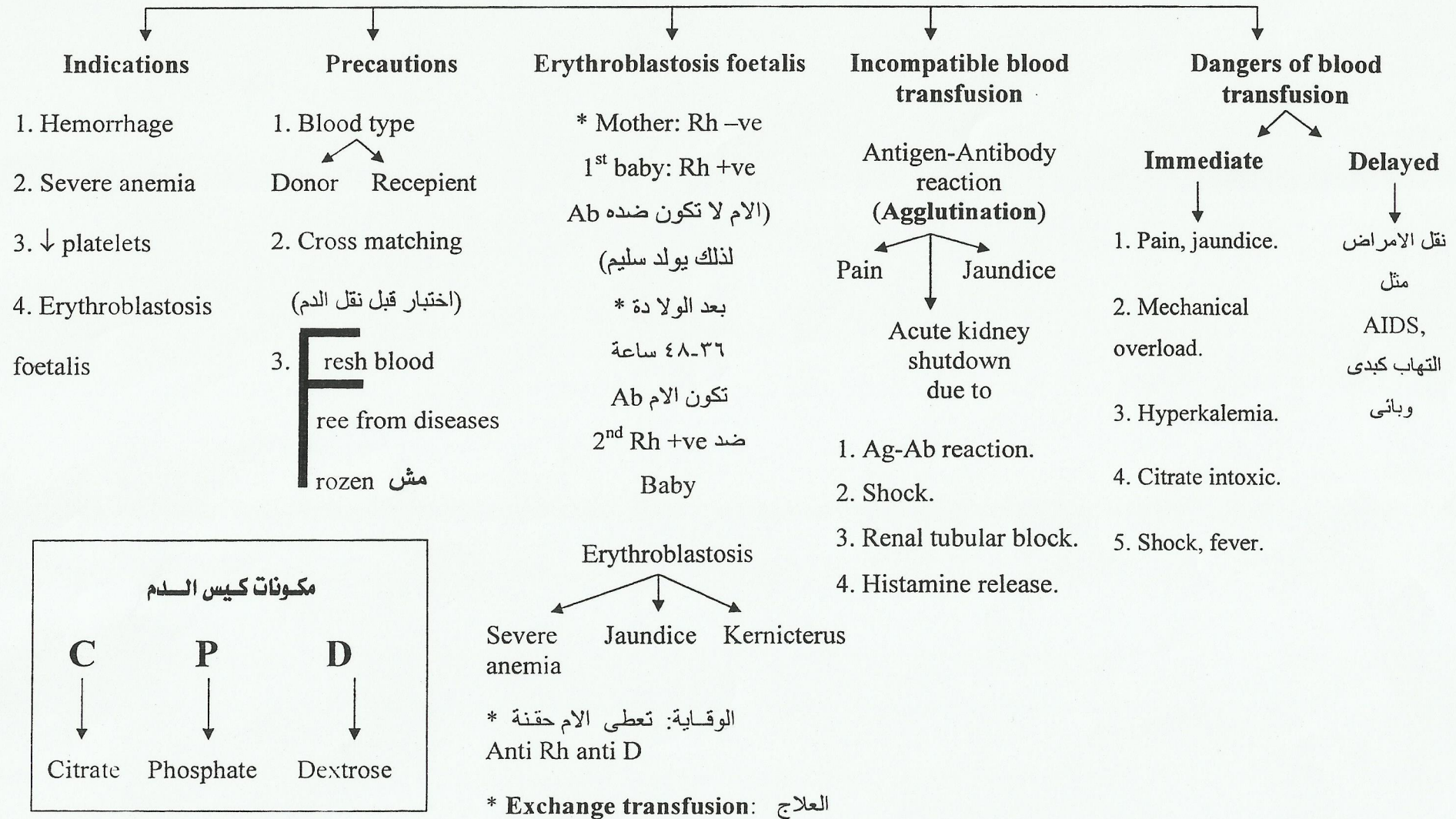
د. محمد فايز Thrombin



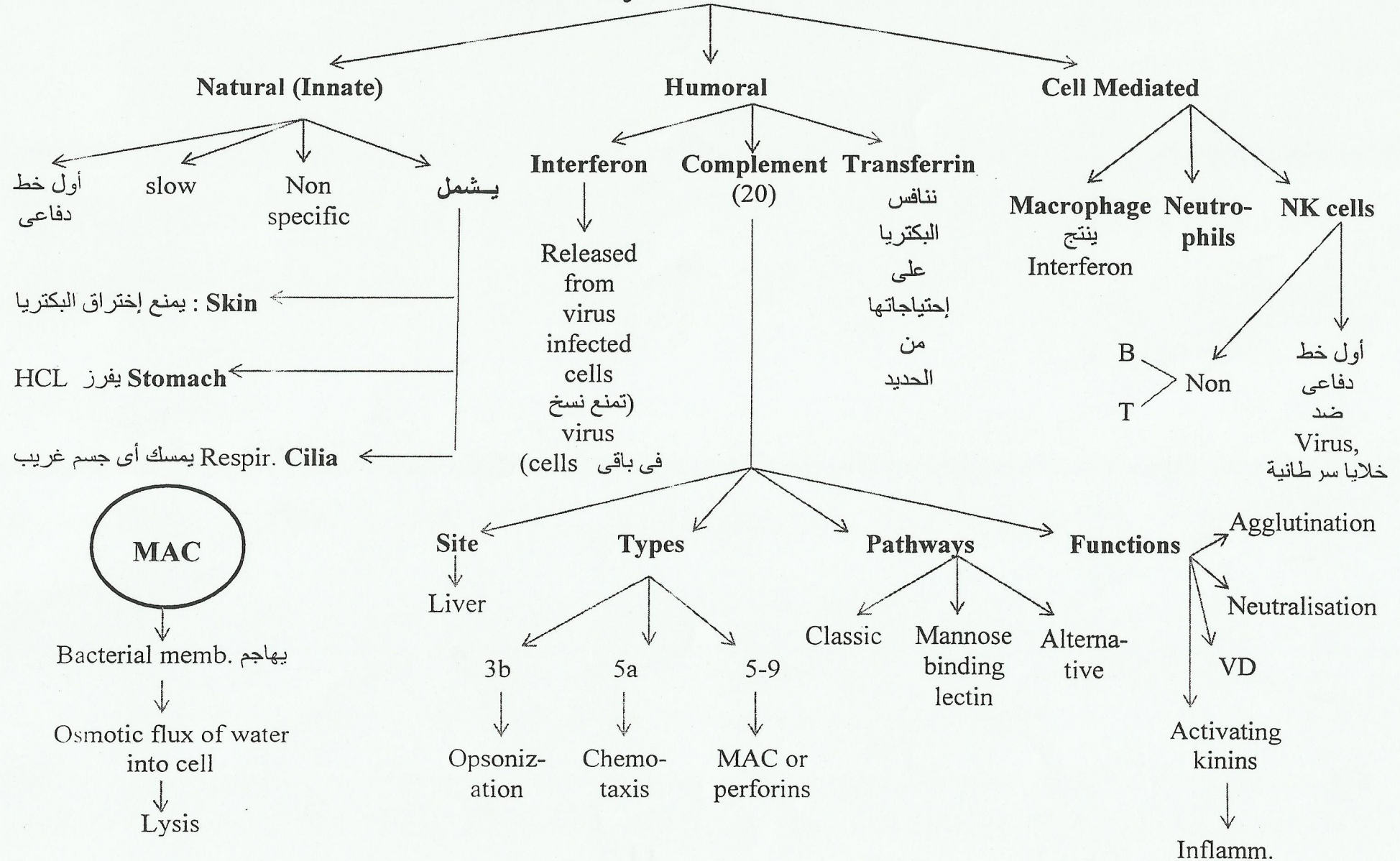
د. محمد فايز Abnormalities of Hemostasis



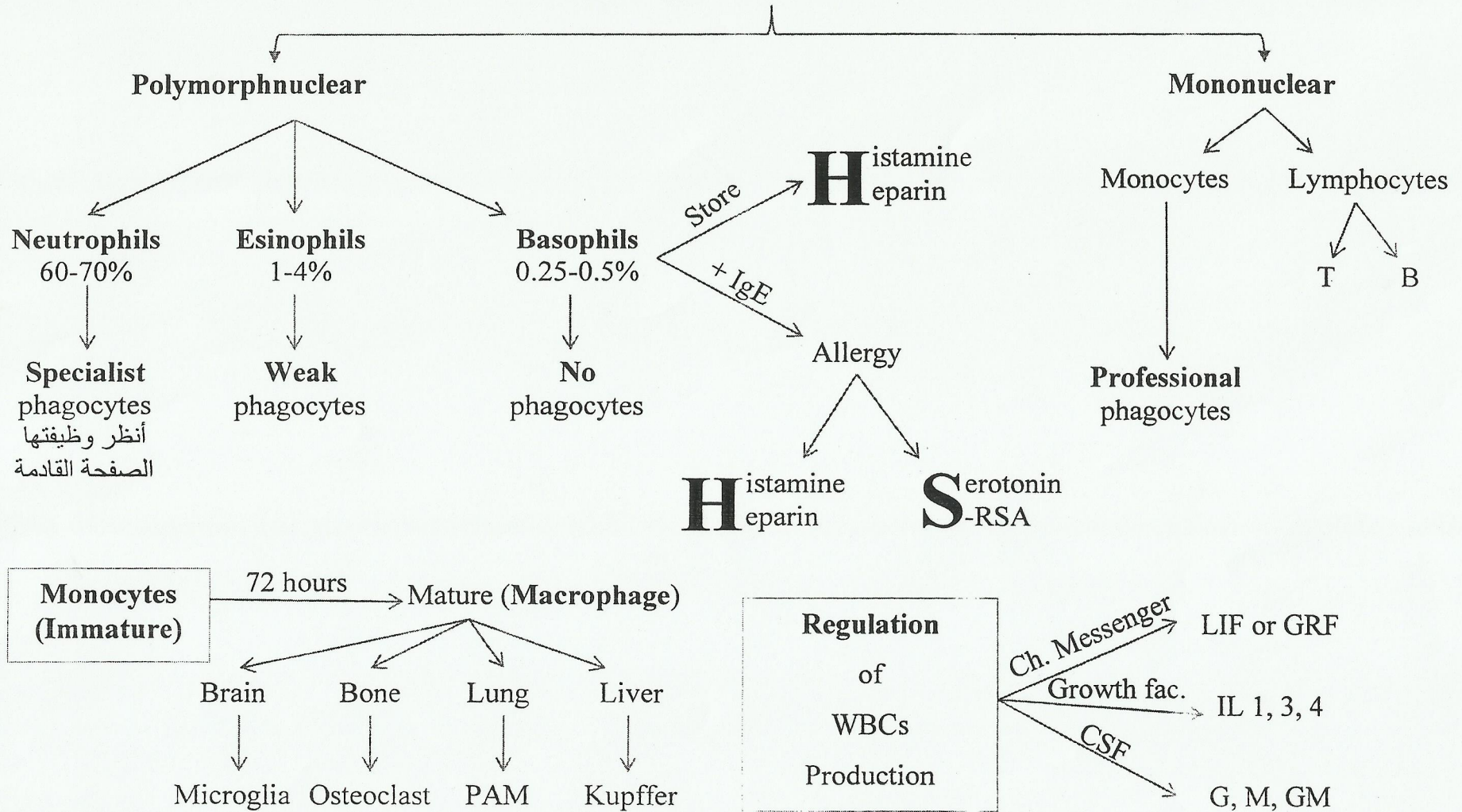
Blood Groups



د. محمد فايز Immune System



د. محمد فايز WBCs



د. محمد فايز WBCs

Neutrophil function

Abnormal production

↑ WBCs = 500.000/mm³

Margination

Attach to capillary
by selectins

Diapedesis

Squeeze through
capillary pores
(bind to integrin)

Chemotaxis

Attraction to
infected area

Opsonisation

Bacteria coated
by tasty substance
(opsonins)

Phagosome

Lysosome

Digest bacteria

Phagocytosis

Bactericidal

O₂⁻ OH⁻ O₂H₂ Myelo-
peroxid

أي **Philia**

معناها
زيادة
بسبب

أي **Penia**

معناها
نقص
بسبب
BM
Depression

Infections

Bacteria

Parasitic

Allergy

↑ Neutrophil ↑ Eosinophil

يهضمها
Eosinophils

سببها
Basophils

Caused by

Cancer

Lymphocytic

Myelogenous

Effects

Metastasis

Bone
fracture

Anemia

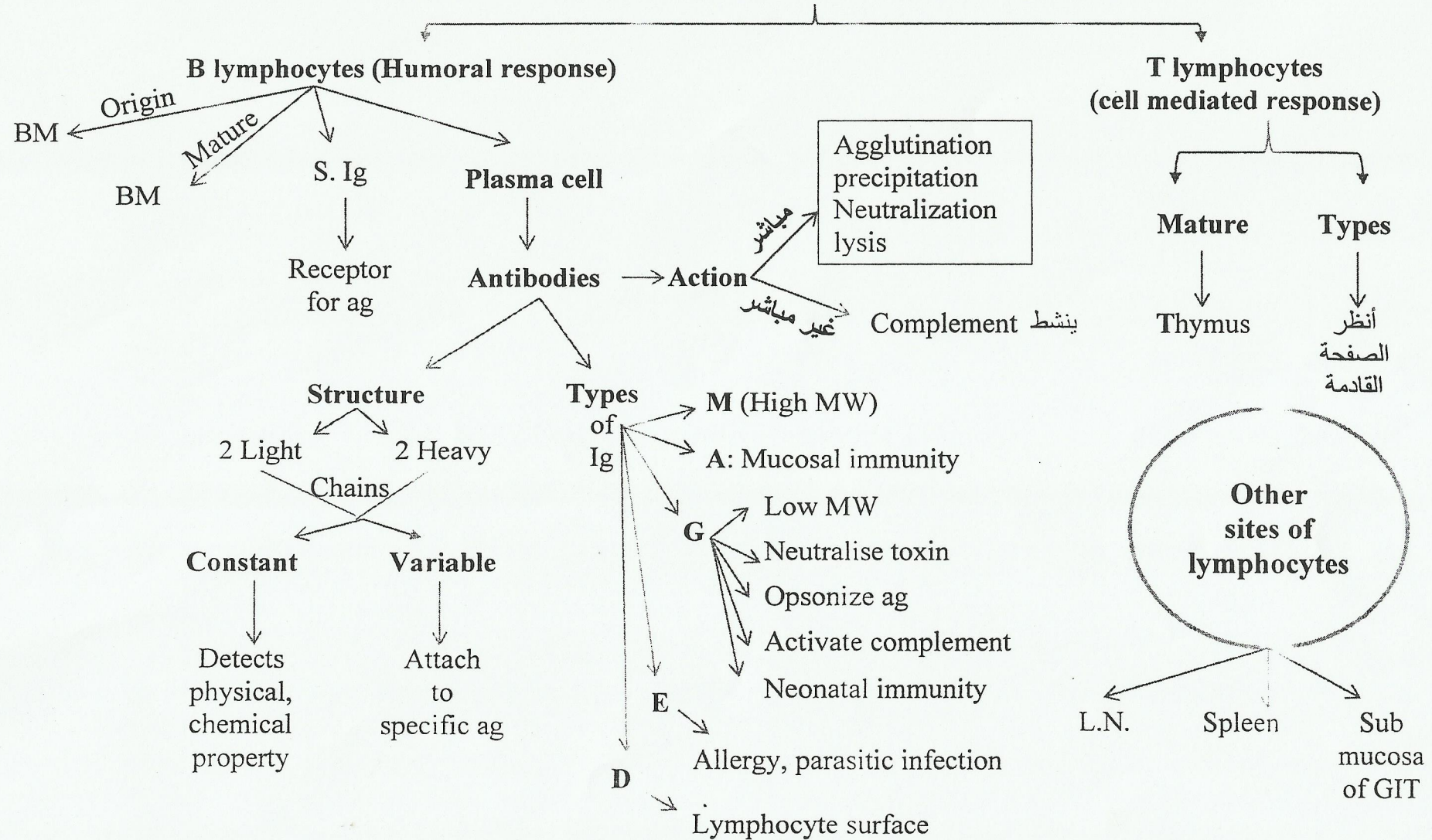
Energy

Lymphocytes **زيادة عدد**

إسمها OSIS **بسبب**

Viral; chronic bacterial Infec.

د. محمد فايز Acquired Immune System

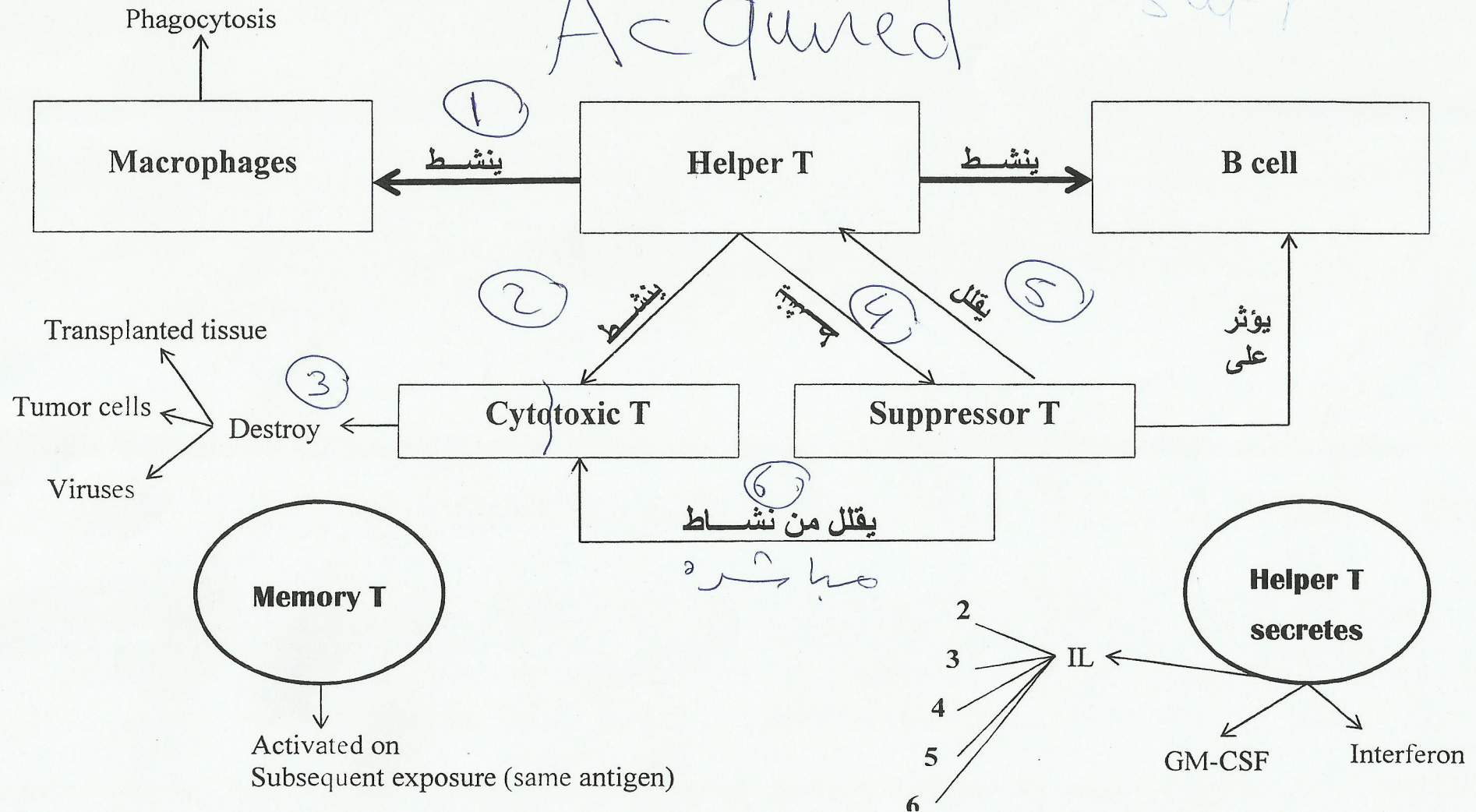


Natural

Types of T cells د. محمد فايز

helper
supp

Acquired



د. محمد فايز Notes

